

Prevalence and association of self-medication on patient health in Medina

Muhammad A Tobaiqi¹, Khalid W Mahrous², Abdullah M Batoot², Saad A Alharbi², Abdulwahab M Batoot², Ahmed M Alharbi², Omar A Ghanem²

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Author Affiliation:

¹Assistant professor in family medicine and community, Taibah University, Taibah college of medicine, Madinah, Saudi Arabia

²Student, Taibah University, Taibah College of medicine, Madinah, Saudi Arabia

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ABSTRACT

Background and Objectives: Self-medication is defined as using drugs without doctor prescription, whether it is modern or traditional treatment through different sources that allowed them to take these medications individually. The World Health Organization (WHO) considers self-medication as a serious problem. This study aimed to explore the prevalence and the association of self-medication among the population in Medina. The study also aimed to know the resources, reasons, knowledge, and other aspects of self-medication. **Methods:** This is a community-based cross-sectional study has been conducted in Medina, Saudi Arabia. The duration of study was one year. The sample includes 281 participants. An online questionnaire has been designed to reach the research goals. Statistical Package for the Social Sciences (SPSS) 22.0 has been used to analyze the collected data. The research used texts, tables, and graphs to present the statistical data. **Results:** The study showed that (58%) of the participants practiced self-medication. The most common reasons for using self-medications are having an old recipe (33.1%), or to save time (33.1%). The most common symptom for using self-medication is headache (70.6%). The most used medicine in self-medication is analgesics (42.9%). Most of the participants received information about the medicines from the drug leaflet (45.4%). **Conclusion:** Self-medication is a serious problem. The prevalence of self-medication is less in this study comparing to other studies around the world. More attention and protocols may help to reduce the prevalence.

Keywords: Self-medication, Prevalence, Medina, Antibiotics, COVID-19

1. INTRODUCTION

Self-medication is defined as using drugs without doctor prescription whether it is modern or traditional treatment through different sources that allowed them to take these medications individually (Selvaraj et al., 2014). It is broad-wide method in dealing with different diseases, in developed countries, and more so in developing countries (Selvaraj et al., 2014). The World Health Organization (WHO) consider self-medication as serious problem need to be controlled (Selvaraj et al., 2014). The type and extent of self-medication and



the reasons for its practices may also vary from country to country. A previous study was done in Riyadh shows that self-medication prevalence (35%) while in other country like, Bahrain (44.8%), Kuwait (92%) (Aljadhey et al., 2015), Oman (94%), Italy (69.2%), Turkey (63.4%) Ethiopia (27.5%), India (11.9%), Iran (35.4%), India (92.8%), Malaysia (77.6%) (Jember et al., 2019).

The most common factors associated with self-medication prevalence are level of education, previous experience of self-medication, occupation, lack of medical insurance, lack of time to visit physicians, low income, and young male gender because they have less awareness of the risks and less knowledge about the complications of this method, other reasons include availability of non-prescribed drugs, people do not like to spend their time in hospitals to get the prescription, and cost (Selvaraj et al., 2014; De Sanctis et al., 2020; Burki et al., 2020).

Despite the negative consequences of self-medication and its high spread, studies on its prevalence and associated factors in Medina are limited. Therefore, the aim of this study is to assess the prevalence of self-medication practice and associated factors among Medina population, in order to reduce the resulting damage and increase health awareness.

2. METHOD

Study Area & Sample

This is a community-based cross-sectional study has been conducted in Medina district, West of Saudi Arabia. Cross-sectional data collection conducted from mid July 2020 to September 2020. However, the duration of the study was one year. The study has excluded health care workers, student in health colleges, duplicated cases, and any participants under the age of 12, or outside Medina district. 426 responses have been received. Of them, 125 duplicated responses have been removed and 20 health care workers have been excluded. Thus, the research has included 281 questionnaires valid for analysis.

Data collection

An online questionnaire has been designed based on a valid questionnaire reference to reach the research goals. The study has been distributed through social media, websites, and apps like WhatsApp, Twitter, and Facebook. The participants have received a soft (Electronic) copy of the questionnaire to answer, and then the data has been collected and interpreted.

Data analysis

Statistical Package for the Social Sciences (SPSS) 22.0 has been used to analyze the collected data. The participants have been divided into 2 groups: those who did not practice self-medication and those who did. The study has used chi-squared test to determine the difference between these groups based on demographic characteristics, which include age, sex, marital status, educational level, employment and household income, and their response to self-medication habit questions. The research used texts, tables, and graphs to present the statistical data.

3. RESULTS

Table 1 shows the distribution of the participants according to their personal data. It is clear from Table 1 that 52.7% of the participants were female, while 47.3% were males, 38.8% of their ages ranged between 18-24 years old, 20.6% ranged between 24-34 years old, and 16% were between 34-44 years old.

Table 1 Distribution of the participants according to demographic characteristic

Variable	N	%	P-value
Age			
12-18	17	6.0	.000*
18-24	109	38.8	
24-34	58	20.6	
34-44	45	16.0	
44-54	32	11.4	
54-65	17	6.0	
65 and above	3	1.1	
Gender			
Male	133	47.3	.371
Female	148	52.7	

Residence place			
Medina city	237	84.3	.000*
Another city	41	14.6	
Village	3	1.1	
Job			
Student	18	6.4	.000*
University student	86	30.6	
Government employee	67	23.8	
Private sector employee	24	8.5	
Free business	3	1.1	
Housewife	39	13.9	
Retired	20	7.1	
Unemployed	24	8.5	
Marital status			
Single	152	54.1	.000*
Married	121	43.1	
Absolute	3	1.1	
Widower	5	1.8	
Qualification			
Primary	4	1.4	.000*
Preparatory	6	2.1	
Secondary	90	32.0	
Academic	165	58.7	
Postgraduate	16	5.7	
Monthly income			
More than 13,000 Riyals	123	43.8	.000*
13,000 Riyals	24	8.5	
Less than 13,000 Riyals	134	47.7	
Total	281	100.0	

Chi-square test *P-value is significant at 0.01 level

The vast majority of respondents (84.3%) resided in Medina, 30.6% were university students, 23.8% were government employees, and 13.9% were housewives. More than half of the participants were single (54.1%), and more than half of the participants (58.7%), were with a university education, while 32% were with secondary education. Their distribution according to monthly income; 43.8% had a high income of more than 13,000 Saudi Riyals per month, while 47.7% had a low income of less than 13,000 Saudi Riyals per month, while 8.5% had an average income of 13,000 Saudi Riyals per month. In the distribution of participants according to having a health insurance, it was noticed that nearly two-thirds of the participants 68.3% did not have health insurance, while 31.7% of them had health insurance (Table 2).

Table 2 Distribution of participants according to health insurance and their practice of self-medication

	N	%
Distribution of participants according to having a health insurance		
Yes	89	31.7
No	192	68.3
Participants involved in starting self-medication		
Yes	163	58.0
No	118	42.0
Total	281	100.0

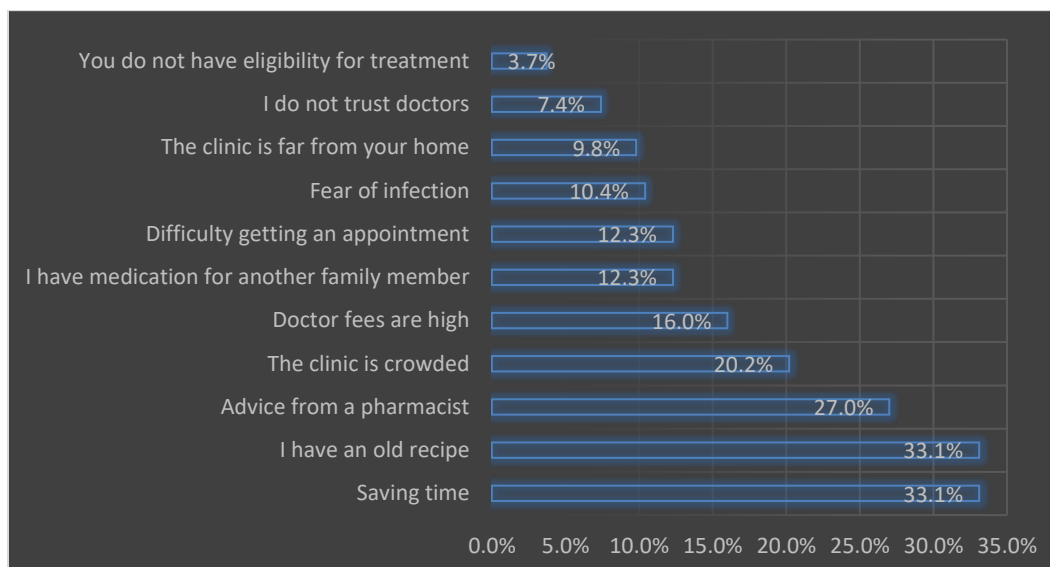


Figure 1 Reasons for using self-medications

Generally, it was noticed that 58% of the participants practiced self-medication, while 42% of them did not (Table 2). Moreover, of those who practiced self-medication, during the last 6 months it was noticed that 13.5% of them did it once, and 22.1% practiced self-medication more than 6 times during the last six months (Table 3). The most common reasons for using self-medications are having an old recipe (33.1%), or to save time (33.1%), followed by having a pharmacist advice (27%). While the absent of eligibility for treatment has been considered as the least common reason (less than 4% of the participants) (Figure 1).

The study showed that the most used type of medication without prescription is analgesics with 42.9% of the participants, while antibiotics were in the second rate with 14.1%, herbs were the third with 13.5%, vitamins were used with 9.2% and laxatives were the least with 0.6% (Figure 2). The most common symptom for which self-treatment was used is headache coming in the first place by 70.6% of the participants, followed by hyperthermia (fever) in the second place by 51.5% (Figure 3).

In the distribution of participants according to the matters that they take into consideration when choosing a drug, 50.3% take into account the type of medicine, while 23.9% of them consider the price of the drug, 17.8% the pharmaceutical company, and 12.9% the country of manufacture (Table 3).

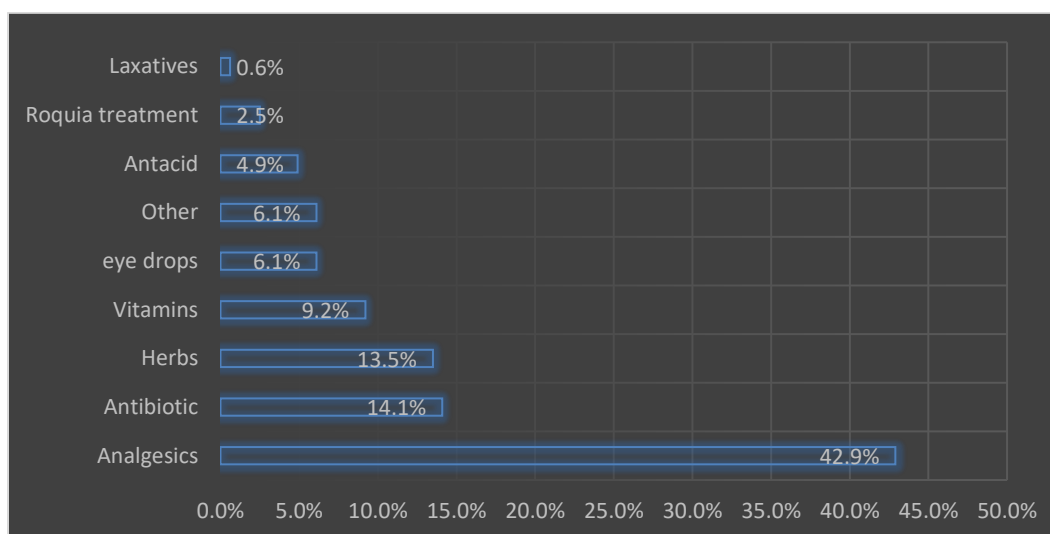


Figure 2 Types of medications used without prescription

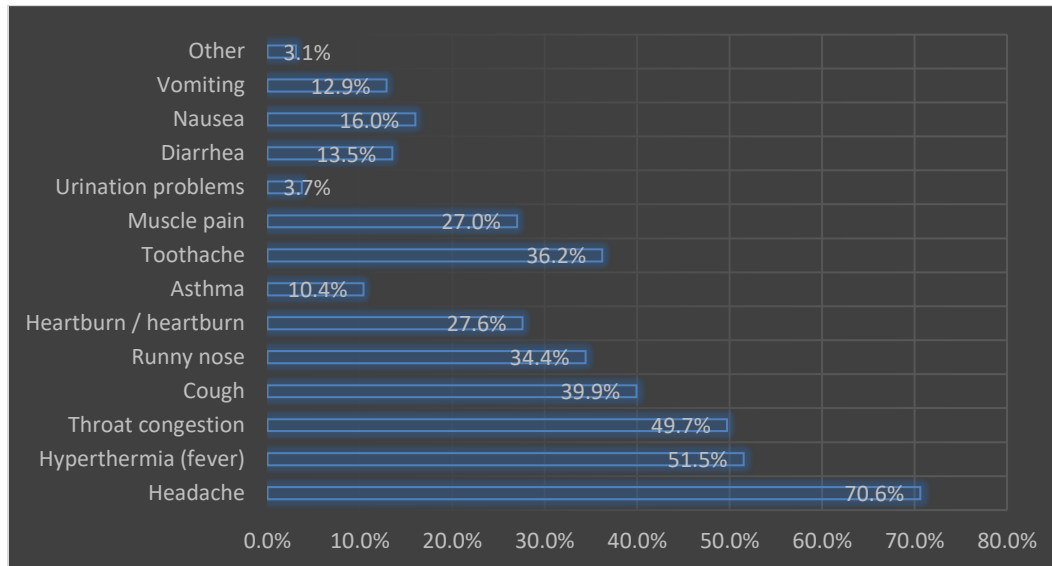


Figure 3 Symptom for which self-treatment was used

Table 3 Distribution of participants on different categories

		N	%
Distribution of participants according to the number of times they used self-medication	Never	37	22.7
	One time	22	13.5
	Twice	23	14.1
	Three times	18	11.0
	Four times	16	9.8
	Five times	11	6.7
	6 or more times	36	22.1
Distribution of participants according to the most important matters that they take into consideration when choosing a drug	Price	39	23.9
	Pharmaceutical company	29	17.8
	Medicine type	82	50.3
	Country of manufacture	21	12.9
	Nothing	41	25.2
	Other	14	8.6
Distribution of participants according to the reasons for choosing a specific drug company or brand	An old recipe from a doctor	60	36.8
	Recommendation from a pharmacist	77	47.2
	Advertisement	8	4.9
	Used by friends or family	69	42.3
	From a previous experience	112	68.7
Distribution of the participants according to the source they received the information about the medicines	The medication leaflet accompanying the medicine	74	45.4
	Recommendation from a friend or relative	42	25.8
	From a specific search engine such as Google	41	25.1
	From social media	6	3.7
Distribution of participants according to how they received treatment or medical advice during COVID-19 pandemic	Social media tools	32	19.6
	Direct visit to hospital	14	8.6
	Pharmacy	86	52.8
	Other	31	19.0
Total		163	100.0

The most common reason for choosing a specific drug company or a brand is a previous experience of the same disease in 68.7% of participants, and the least common reason is advertisement (less than 5% of the participants) (Table 3). According to the study, most of the participants received information about the medicines from the drug leaflet (45.4%), while 25.8% of them get the information from a friend or relative, 25.1% through search engines such as Google, and 3.7% get the information from social media (Table 3). The most important place for participants to obtain the medications is pharmacy (92%), while 17.8% of them get it from the primary care centers and hospitals, and the least used source is online source (2.5%) (Figure 4).

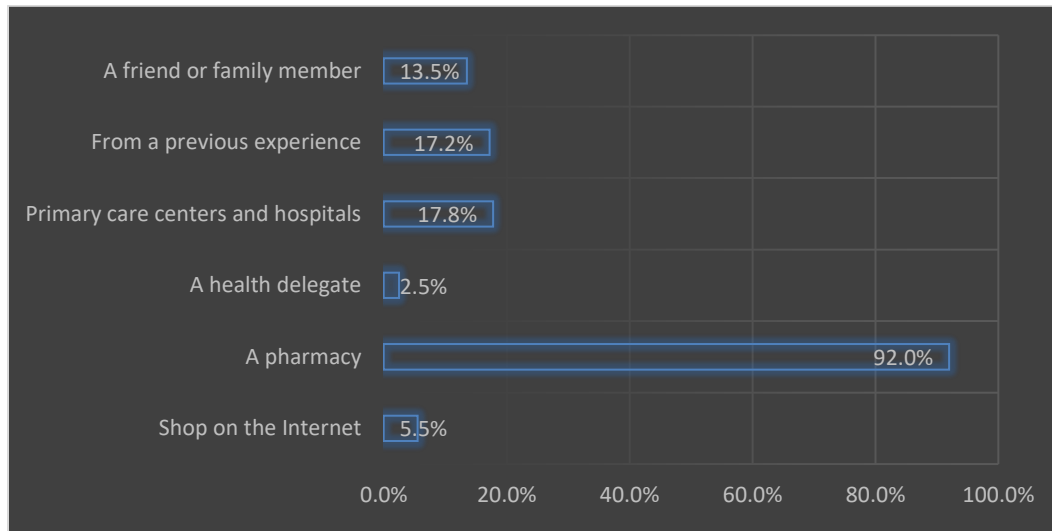


Figure 4 Places to obtain the medications

The study showed that 52.1% of the participants sometimes check the information described in the medicine leaflet before self-treatment, and 44.2% of them always check it, and 3.7% of them do not (Table 4). According to the extent of understanding the medical leaflet instructions attached to the medicine, 51.5% of them told that they partially understand it, 44.2% of them fully understand it; while 4.3% do not understand the instructions of the medical leaflet that came with the medicine (Table 4). The majority of participants 79.1% did not experience side effects with self-medication, while 20.9% faced side effects with self-medication. 28.8% of those who faced side effects stopped taking the drug while 13.5% of them went to the pharmacy, 11.7% went to the hospital, and 6.1% went to primary care centers (Table 5 and Figure 5).

Table 4 Distribution of participants to their use of medication leaflet and hospital visits during COVID-19 pandemic

	N	%
Distribution of participants according to their verification of the information described in the medicine leaflet before self-treatment		
Never	6	3.7
Sometimes	85	52.1
Yes, always	72	44.2
Distribution of participants according to the extent of understanding the medical leaflet instructions attached to the medicine		
I don't understand	7	4.3
Partial understanding	84	51.5
Full understand	72	44.2
Distribution of participants according to whether their visit to the hospital have increased during COVID-19 pandemic		
Yes	6	3.7
Hasn't changed	63	38.7
	94	57.7

Has decreased		
Total	163	100.0

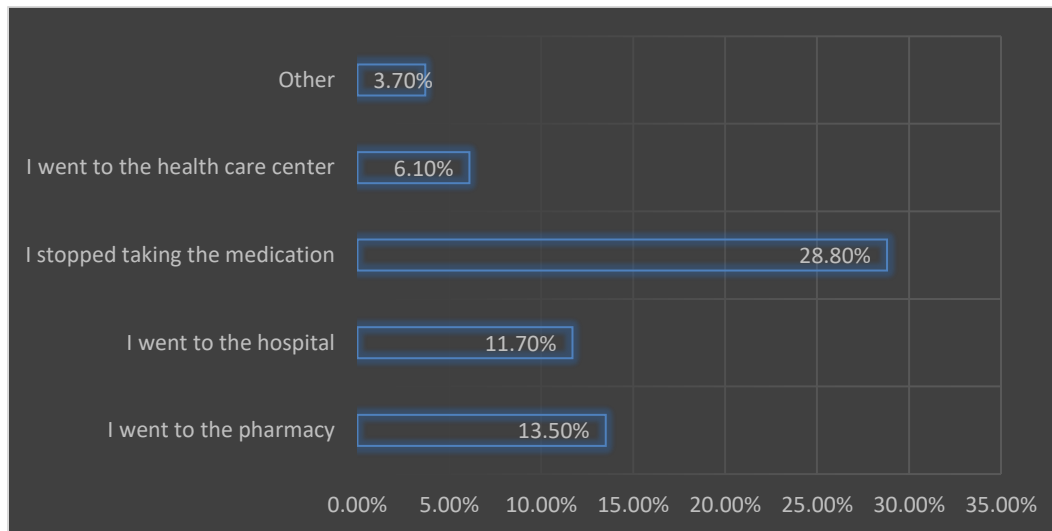


Figure 5 Response of participants to side effects

During COVID-19 pandemic Almost 36% of the participants told that their rate of self-medication has increased, while 54% told that their rate did not, 10.4% of them told that their rate has decreased (Table 5). Almost 58% of the participants told that their visit to the hospital have decreased during COVID-19 pandemic, while 38.7% of them told that their rate hasnot changed, and 3.7% have increased their visit to the hospital during COVID-19 pandemic (Table 4). The distribution of participants according to how they received medical advice during COVID-19 pandemic, 52.8% of the participants received the advice through the pharmacy, 19.6% through social media, and 8.6% through a direct visit to the hospital (Table 3). The vast majority, 92.6% of the participants were not diagnosed with an infection during the last six months, while 7.4% were diagnosed with an infection during the last six months (Table 5). In regard using of antibiotic without a prescription, the percentage was almost the same of those who used it and those who did not in this study population (Table 5).

Table 5 Distribution of participants according to their self-medication habits and use of antibiotics

	N	%
Distribution of participants according to whether they had previously experienced side effects with self-medication		
Yes	34	20.9
No	129	79.1
Distribution of participants according to whether the rate of their use of self-medication increased during COVID-19 pandemic		
Yes	58	35.6
No	88	54.0
Has decreased	17	10.4
Distribution of participants according to whether they were diagnosed with an infection during the last six months.		
Yes	12	7.4
No	151	92.6
Distribution of participants according to their use of antibiotics during their illness without a prescription.		
Yes	80	49.1
No	83	50.9
Distribution of participants according to whether they had		

previously changed the antibiotic to another antibiotic during their treatment period		
Yes	11	6.8
No	121	74.2
Sometimes	31	19.0
Total	163	100.0

It is noticed that the most common conditions for which the participants used antibiotics for, were sore throat, came in first place by 40.5%, hyperthermia ranked second by 26.4%, toothache ranked third by 23.3%, cough 12.3%, runny nose 11%, and ear pain 11% (Figure 6). According to the method of using antibiotic (dose, number, duration ...etc.), 22.1% took the method through consulting the doctor, 19.6% through consulting a pharmacist, 17.2% from their previous experience, 16.6% by reading the prescription, and 3.7% by consulting a friend or family member (Table 6).

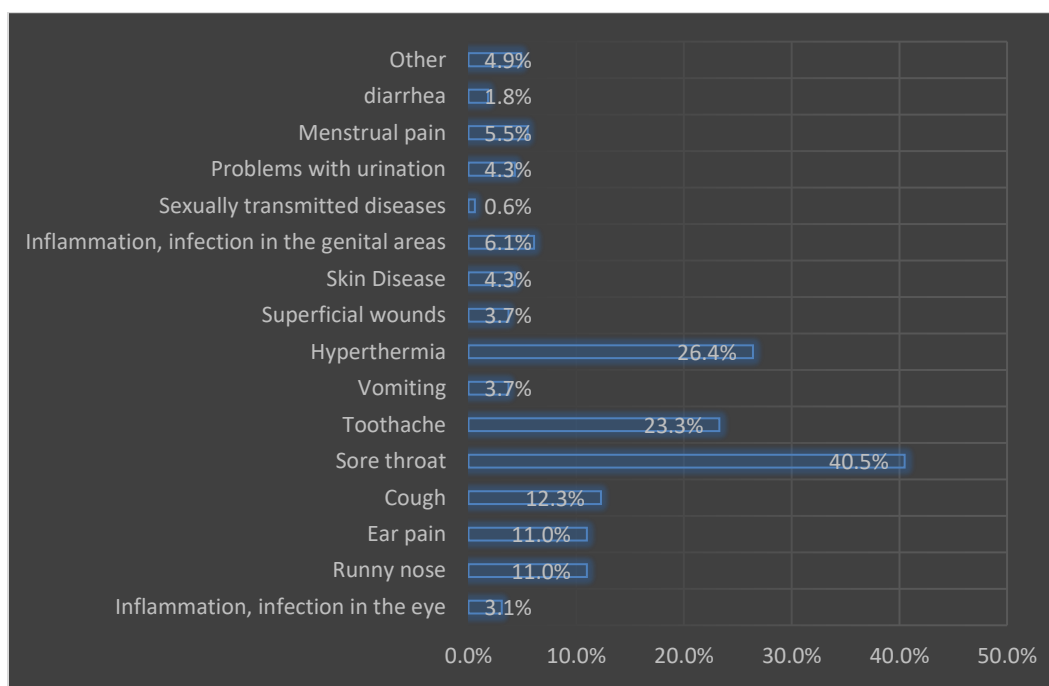


Figure 6 Common diseases for which antibiotics were used among participants

Table 6 Distribution of participants According to the method of using antibiotic

	N	%
Read the recipe	27	16.6
Consult a doctor	36	22.1
Consult a primary healthcare center	4	2.5
Consult a pharmacist	32	19.6
Consult a friend or family member	6	3.7
Ads	2	1.2
Previous Experience	28	17.2
Automatic guessing	2	1.2
Other	26	16.0
Total	163	100.0

Almost 75% of the participants did not change the antibiotic with another antibiotic during their treatment period, while 19% of them sometimes did that, and 6.8% had previously changed antibiotic with another antibiotic during their treatment without clinical advice (Table 6). The reasons of changing antibiotics are lack of availability of the antibiotics (16.6%), did not feel the difference (16%), side effects of the drug (8%), and the lower price of the antibiotic compared to the first antibiotic (3.1%) (Table 7).

While according to the time of the participants stopped using the prescribed antibiotic, 39.9% of them stopped using the antibiotic they had given after the symptoms disappeared, while 28.8% of them stopped it after the end of the required period for treatment, 9.2% of the participants stopped it after the end of the antibiotic, and 7.4 % of them stopped using the antibiotic after few days of using them, regardless of result (Table 8).

Table 7 Reasons of changing antibiotics

	N	%
You didn't feel a difference	26	16.0
not available	27	16.6
Side effects of the drug	13	8.0
Less expensive than the initial antibiotic	5	3.1
Other	92	56.4
Total	163	100.0

Table 8 Distribution of participants according to when they stopped the antibiotics

	N	%
After a few days of using it regardless of the result	12	7.4
After the symptoms disappear	65	39.9
After the antibiotic is finished	15	9.2
After the end of the period required for treatment	47	28.8
Other	24	14.7
Total	163	100.0

Association of self-medication with demographic characteristic

Among demographic characteristic the researchers have found a statistically significant association between gender and use of self-medication (P-value =0.01 <0.05), and a statistically significant association between qualification and the use of self-medication (P-value =0.02 <0.05) (Table 9).

Table 9 Association of self-medication with demographic characteristic

Variable	Category	use of self-medication		Chi-Square	P-value
		Yes	No		
Age	12-18	10	12	9.977	.126
	18-24	73	82		
	24-34	38	48		
	34-44	35	29		
	44-54	27	12		
	54-65	12	12		
	65 and more	4	1		
Gender	Male	86	110	6.580	.010*
	Female	113	86		
Residence place	Medina city	171	162	3.442	.179
	Another City	24	33		
	Village	4	1		
Job	Student	8	11	7.279	.400
	University student	55	68		
	Government	56	50		

Marital status	employee			3.898	.273
	Private sector employee	19	20		
	Free business	2	1		
	Housewife	25	19		
	Retired	10	14		
	Unemployed	24	13		
	Single	99	116		
	Married	93	76		
	Absolute	3	2		
	Widower	4	2		
Qualification	Primary	7	0	11.62	.020*
	Preparatory	4	2		
	Secondary	54	72		
	Academic	121	114		
	Postgraduate	13	8		
Monthly income	More than 13,000 riyals	89	91	.119	.942
	13,000 riyals	16	15		
	Less than 13,000 riyals	94	90		

Association of demographic characteristics with owing health insurance

According to the study analysis, the researchers have found statistically significant association between residence place and owning health insurance (P-value =0.009 <0.05), an association between Job and Owning health insurance. (P-value =0.000 <0.05) (Table 10).

Table 10 Association of demographic characteristics with owing health insurance

Variable	Category	Owning health insurance		Chi-Square	P-value
		Yes	No		
Age	12-18	6	16	7.809	.252
	18-24	48	107		
	24-34	27	59		
	34-44	14	50		
	44-54	14	25		
	54-65	11	13		
	65 and more	0	5		
Gender	Male	67	129	2.662	.103
	Female	53	146		
Residence place	Medina city	91	242	9.464	.009*
	Another City	27	30		
	Village	2	3		
Job	Student	8	11	79.426	.000**
	University student	32	91		
	Government employee	21	85		
	Private sector employee	34	5		

	Free business	1	2		
	Housewife	16	28		
	Retired	6	18		
	Unemployed	2	35		
Marital status	Single	64	151	4.043	.257
	Married	50	119		
	Absolute	2	3		
	Widower	4	2		
Qualification	Primary	0	7	4.964	.291
	Preparatory	3	3		
	Secondary	40	86		
	Academic	69	166		
	Postgraduate	8	13		
Monthly income	More than 13,000 riyals	59	121	2.292	.318
	13,000 riyals	6	25		
	Less than 13,000 riyals	55	129		

4. DISCUSSION

This study has been conducted on Medina population and showed that two third of the participants has practiced self-medication. Comparing to a study in central Saudi Arabia in Riyadh where self-medication prevalence was 35.4% (Aljadhey et al., 2015). The prevalence was higher in other countries. In a study done in Pakistan, the prevalence of self-medication was 80.4% (Zafar et al., 2008). Similarly in Brazil, the prevalence was 86.4% (Corrêa Da Silva et al., 2012). Surprisingly, in Bangladesh, the highest self-medication reported, the prevalence was 100% (Alam et al., 2015). Comparing to all studies mentioned above, our study result is promising because it showed that only 58% of the population have practiced self-medication, which might indicate that there is more safe practice with dealing with self-medication in Medina.

The most common reason for using self-medication in this study is timesaving. Similar result found in a study conducted in Karachi, Pakistan, which showed that 39% of their participants has said that they practice self-medication to save time (Limaye et al., 2017). This similarity may because we now live in an era of fast services and people do not like to wait. Most of the participants in this study practice self-medication to treat headache (70.6%). Similar result found in study in Karachi, Pakistan which showed that 90% practice self-medication to treat headache (Limaye et al., 2017). This is because the prevalence of headache is common among adults by 50% and half to three quarters of adult between 18-65 years old globally suffer from headache at least once per year according to the WHO (World Health Organization, 2005).

Half of this study population are using the leaflet accompanying the drugs as the main source of information. Comparing to a study of self-medication in central Saudi Arabia in Riyadh city reported that the main source of information regarding medications was physicians and pharmacists by 80.2% (Aljadhey et al., 2015). The most used medicine types in self-treatment were analgesics by 42.9%, while antibiotics were in the second place. That was promising in comparison to a study in Karachi, Pakistan where antibiotics were the most common drug 47.6% (Shah et al., 2014), this misuse might be associated with the significant increase in antibiotic resistance worldwide. The prevalence of antibiotics use without prescription during illness was 49.1%. While the other half (50.9%) did not use antibiotics without a prescription. Another study was done in Central Saudi Arabia in Riyadh found that the frequency of unauthorized antibiotics use was 22.3% (Aljadhey et al., 2015). The vast majority of participants stopped the prescribed antibiotic when the symptoms disappeared (39.9%). A study from Pakistan showed a similar result (50%) as expected (Limaye et al., 2017). This may because they think the disease disappear too.

The most common symptom/illness that prompted the use of antibiotics in our study was sore throat (40.5%). This finding supports the finding of a study in Riyadh, Saudi Arabia where sore throat was the most common symptom (48.8%) for use of antibiotics (Al-Shibani et al., 2017). The most practiced method for learning how to use antibiotics was through consulting the doctor (22.1%). While in Jordan, 53.1% of participants say that they used antibiotics based on their previous experience with similar illness and knowledge of the drugs that were prescribed by their doctors (Sawair et al., 2008).

During COVID-19 pandemic in Medina, 35.6% of participants increased their self-medication. While in majority of participants (54%), self-medication remained the same. The rate of hospital visit decreased with percentage of 57.7%. This may be due to national quarantine. Hence, self-medication practice was mainly through pharmacies (52.8%).

5. CONCLUSION

The researchers believe that this is the first study done to examine the prevalence and awareness of self-medication in Medina and how does COVID-19 impact self-medication practice. The result shows the prevalence of the practice of self-medication among Medina residents. According to the prevalence in this study comparing to other studies around the world, it accounts to be lesser, but it still needs more attention and significant protocols to avoid the problems that follow self-medication.

Abbreviation

WHO (world health organization), Statistical Package for the Social Sciences (SPSS).

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We thank all the participants who contributed to the study sample.

Author contribution

All authors of this study were equally involved at all stages of the study. There is no author whose name is not listed in the authors list.

Ethical approval

The study was approved by the Medical Ethics Committee of Taibah University (ethical approval code: PEP 4 – M3 v2).

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This study has not received any external funding.

Conflicts of interest

The authors declare that they have no conflict of interest.

Data and materials availability

All data associated with this study are present in the paper.

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